What is claimed is:

1. A method for evaluating a condition of a region of interest in a patient, the method comprising:

(a) taking image data of the region of interest;

(b) extracting a structure from the image data;

(c) subdividing the structure into load-bearing and non-load bearing subdivisions; and

(d) calculating a biomarker for each of the load-bearing and non-load-bearing subdivisions.

2. The method of claim 1, wherein the region of interest includes a joint.

3. The method of claim 2, wherein the joint is a knee.

4. The method of claim 2, wherein the structure is cartilage in the joint.

5. The method of claim 2, wherein step (a) comprises taking MRI image data.

6. The method of claim 2, wherein step (b) comprises unsupervised segmentation of the image data to provide segmented image data.

7. The method of claim 6, wherein step (b) further comprises manual labeling of bone features in the segmented image data.

8. The method of claim 7, wherein step (b) further comprises determining whether the segmented image data are accurate and, if the segmented image data are not accurate, correcting the segmented image data in accordance with the manual labeling.

9. The method of claim 8, wherein step (b) further comprises relaxing boundaries of the bone features.

10. The method of claim 1, wherein, in step (d), the biomarker comprises a biomarker selected from the group consisting of:

- cartilage roughness;
- cartilage volume;

- cartilage thickness;
- cartilage surface area;
- shape of the subchondral bone plate;
- layers of the cartilage and their relative size;
- signal intensity distribution within the cartilage layers;
- contact area between the articulating cartilage surfaces;
- surface topology of the cartilage shape;
- intensity of bone marrow edema;
- separation distances between bones;
- meniscus shape;
- meniscus surface area;
- meniscus contact area with cartilage;
- cartilage structural characteristics;
- cartilage surface characteristics;
- meniscus structural characteristics;
- meniscus surface characteristics;
- pannus structural characteristics;
- joint fluid characteristics;
- osteophyte characteristics;
- bone characteristics;
- lytic lesion characteristics;
- prosthesis contact characteristics;
- prosthesis wear;
- joint spacing characteristics;
- tibia medial cartilage volume;

- tibia lateral cartilage volume;
- femur cartilage volume;
- patella cartilage volume;
- tibia medial cartilage curvature;
- tibia lateral cartilage curvature;
- femur cartilage curvature;
- patella cartilage curvature;
- cartilage bending energy;
- subchondral bone plate curvature;
- subchondral bone plate bending energy;
- meniscus volume;
- osteophyte volume;
- cartilage T2 lesion volumes;
- bone marrow edema volume and number;
- synovial fluid volume;
- synovial thickening;
- subchondrial bone cyst volume;
- kinematic tibial translation;
- kinematic tibial rotation;
- kinematic tibial valcus;
- distance between vertebral bodies;
- degree of subsidence of cage;
- degree of lordosis by angle measurement;
- degree of off-set between vertebral bodies;
- femoral bone characteristics; and

- patella characteristics.

11. The method of claim 10, wherein the biomarker further comprises a higher-order mreasure.

12. The method of claim 11, wherein the higher-order measure is selected from the group consisting of curvature, topology and shape.

13. The method of claim 1, wherein steps (a)-(d) are performed at a plurality of times, and wherein the method further comprises (e) determining a change in time in each of the biomarkers calculated in step (d).

14. A system for evaluating a condition of a region of interest in a patient, the system comprising:

an input for receiving an input of image data of the region of interest; and

a processor, in communication with the input, for:

(a) receiving the image data of the region of interest from the input;

(b) extracting a structure from the image data;

(c) subdividing the structure into load-bearing and non-load bearing subdivisions; and

(d) calculating a biomarker for each of the load-bearing and non-load-bearing subdivisions.

15. The system of claim 14, wherein the processor performs step (b) through unsupervised segmentation of the image data to provide segmented image data.

16. The system of claim 15, wherein the input comprises an input for receiving a manual labeling of bone features in the segmented image data, and wherein the processor performs step (b) in accordance with the manual labeling.

17. The system of claim 16, wherein the processor performs step (b) further by whether the segmented image data are accurate and, if the segmented image data are not accurate, correcting the segmented image data in accordance with the manual labeling.

18. The system of claim 17, wherein the processor performs step (b) further by relaxing boundaries of the bone features.

19. The system of claim 14, wherein the biomarker comprises a biomarker selected from the group consisting of:

- cartilage roughness;
- cartilage volume;
- cartilage thickness;
- cartilage surface area;
- shape of the subchondral bone plate;
- layers of the cartilage and their relative size;
- signal intensity distribution within the cartilage layers;
- contact area between the articulating cartilage surfaces;
- surface topology of the cartilage shape;
- intensity of bone marrow edema;
- separation distances between bones;
- meniscus shape;
- meniscus surface area;
- meniscus contact area with cartilage;
- cartilage structural characteristics;
- cartilage surface characteristics;
- meniscus structural characteristics;
- meniscus surface characteristics;
- pannus structural characteristics;
- joint fluid characteristics;
- osteophyte characteristics;

- bone characteristics;
- lytic lesion characteristics;
- prosthesis contact characteristics;
- prosthesis wear;
- joint spacing characteristics;
- tibia medial cartilage volume;
- tibia lateral cartilage volume;
- femur cartilage volume;
- patella cartilage volume;
- tibia medial cartilage curvature;
- tibia lateral cartilage curvature;
- femur cartilage curvature;
- patella cartilage curvature;
- cartilage bending energy;
- subchondral bone plate curvature;
- subchondral bone plate bending energy;
- meniscus volume;
- osteophyte volume;
- cartilage T2 lesion volumes;
- bone marrow edema volume and number;
- synovial fluid volume;
- synovial thickening;
- subchondrial bone cyst volume;
- kinematic tibial translation;
- kinematic tibial rotation;

- kinematic tibial valcus;
- distance between vertebral bodies;
- degree of subsidence of cage;
- degree of lordosis by angle measurement;
- degree of off-set between vertebral bodies;
- femoral bone characteristics; and
- patella characteristics.

20. The system of claim 19, wherein the biomarker further comprises a higher-order mreasure.

21. The system of claim 20, wherein the higher-order measure is selected from the group consisting of curvature, topology and shape.

22. The system of claim 14, wherein the processor performs steps (a)-(d) at a plurality of times and further performs (e) determining a change in time in each of the biomarkers calculated in step (d).